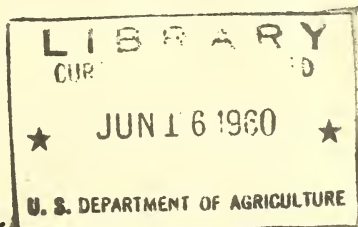


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## *Baldcypress*

(*Taxodium distichum*)

By H. S. BETTS, formerly senior engineer, Division of Forest Products<sup>1</sup>

Baldcypress, or "cypress," is a long-lived tree that grows to large size throughout the swamplands of the southeastern part of the United States. The heartwood, noted for its durability, is especially suited for construction purposes where moderate resistance to decay is required. The tree develops an expanded conical base, often deeply lobed, and an extensive root system that give it a high degree of stability even in soft, wet soils. In places where water covers the ground for long periods, baldcypress produces peculiar conical growths known as knees, which extend upward from the roots for several feet above the surface of the water. These growths appear to serve both as anchors and as organs that supply additional amounts of oxygen to the roots.

The original supply of baldcypress (virgin stands) has been heavily depleted, and the species is not reproducing in many cut-over swamps. Higher water levels than at the time the original forests became established and lack of seed trees may be contributing causes. Trees grew slowly under forest conditions, generally requiring at least 2 centuries to reach a size large enough to furnish a satisfactory proportion of heartwood lumber. In old virgin stands, trees sometimes attained an age of 800 years, a diameter of 6 feet above the basal swell, and a height of 120 feet. Occasional trees were as much as 1,200 years old and 8 feet in diameter above the swell, with a height of 150 feet. The larger trees were generally hollow at the butt. Baldcypress stands today contain only a scattered few large old trees. Most of the cut is obtained from trees 100 to 450 years old; these usually vary from less than 12 inches to 30 inches in diameter above the butt swell.

Baldcypress is expensive to cut and log. Logging is now done by the overhead skidder method; the logs are dragged to a central point by means of a carriage traveling on a heavy cable suspended between

<sup>1</sup> Revised by Division of Forest Products Research, Forest Service, Washington, D.C., and Forest Products Laboratory, Forest Service, Madison, Wis. Mr. Betts retired in January 1945.

Production data are derived from the 1954 census of manufactures or from later estimates. Figures in table 1 are from special detailed surveys covering the use of individual species in the manufacture of wood products; the latest survey was taken for 1948.

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trees generally 600 feet or more apart. In the larger operations, railroads must be constructed on piling to carry logging machinery into the swamps and logs to the mill. The prospects for a continued supply of baldcypress depend largely on (1) the extent to which the swamp-lands, where it grows naturally, are reclaimed by drainage for purposes other than the growing of trees, and (2) the general adoption of improved methods of lumbering that leave cut-over areas in a condition favorable to reproduction. Some second-growth baldcypress is now being cut on areas logged many years ago.

**Nomenclature.**—Baldcypress (*Taxodium distichum*) and its variety, pondcypress (*T. distichum* var. *nutans*), are often known merely as "cypress" and have several distinguishing commercial names for lumber—cypress, gulf cypress, yellow cypress, and white cypress. The U.S. Department of Commerce in its Trade Promotion Survey No. 194 (1939) recognized red cypress (coast type), yellow cypress (inland type), and white cypress (inland type). In the wood available today, no practical differences can be detected in the decay resistance of baldcypress from different areas, as had once been supposed.

**Distribution and growth.**—The range of baldcypress extends along the Atlantic Coastal Plain from Delaware to southern Florida, westward through the gulf coast region to southeastern Texas, and up the Mississippi Valley to southwestern Indiana (fig. 1). The heaviest stands occur in the extensive swamps of the lower Mississippi Valley and Florida, where pure forests of baldcypress formerly covered large areas. The coastal river swamps of North and South Carolina and Georgia and the inland swamp districts along the Mississippi River also once contained extensive baldcypress forests. The variety known as pondcypress is found in parts of the same range as baldcypress from southeastern Virginia to southeastern Louisiana, especially in the Atlantic Coastal Plain. It is commonly cut and sold with baldcypress without distinction.

Although baldcypress is generally restricted to very wet situations and a warm climate, it will grow in soil where a moist condition is fairly permanent and under a considerable range of climate. Often, however, it cannot compete successfully with other local species of trees except in locations so wet that other trees cannot exist. Virgin trees in Louisiana 200 years old were found to have an average diameter of 20 inches breast high and an average diameter of 12.8 inches outside the bark at 20 feet above the ground.<sup>2</sup> Second-growth or open-growth trees grow considerably faster. Second-growth baldcypress in Maryland 100 years old was found to reach an average diameter of 21.3 inches breast high and an average diameter at 20 feet above the ground of 8.7 inches. Saplings, under favorable conditions, reach a height of about 4 feet in 4 years.

Baldcypress can reproduce by sprouts from the stump as well as by seed. The seeds are produced in abundance but are not scattered to any extent by wind or other carriers. Considerable soil moisture is required for germination and early growth, but submergence may cause death.

The heartwood of living baldcypress trees of all ages, especially that of overmature trees, is very susceptible to attack by a fungus,

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<sup>2</sup>The large swelling at the base makes it necessary to take measurements about 20 feet above the ground for comparison with other trees.

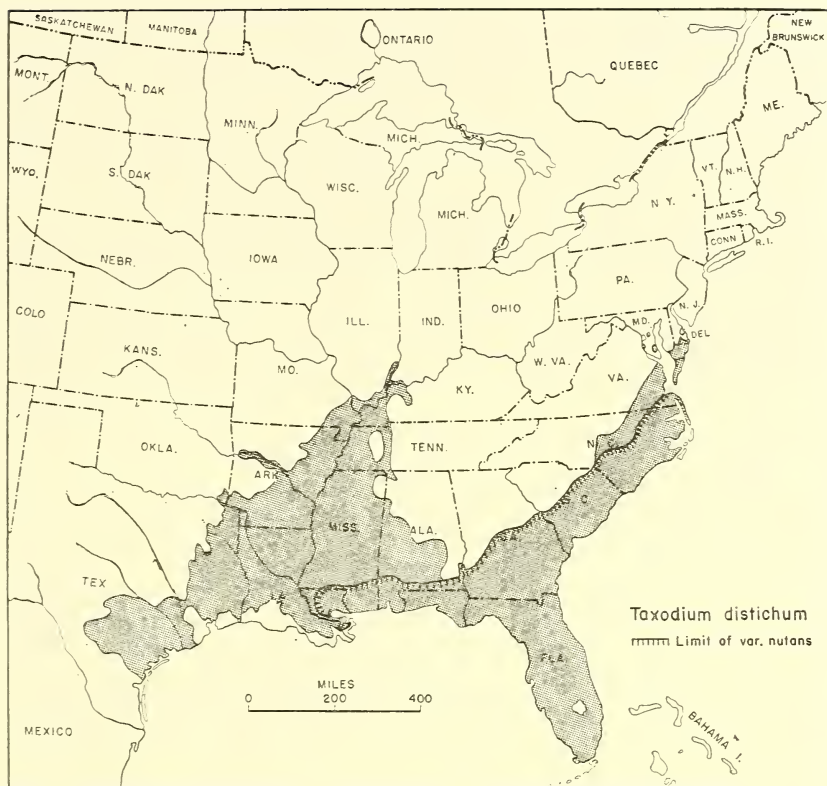


FIGURE 1.—Range of baldcypress (*Taxodium distichum*) and pondcypress (*T. distichum* var. *nutans*).

belonging to the genus *Stereum*, that causes what is known as “pecky” cypress. This fungus frequently destroys a considerable part of the heartwood at the base of mature trees growing under very wet conditions. The action of the fungus ceases when the tree is felled, and as far as is known the lasting qualities of baldcypress lumber are unaffected by the presence of pecky material.

**Supply.**—The total stand of baldcypress sawtimber in the United States was estimated at 12.7 billion board feet in 1953. About 75 percent of the total volume was located in the five States named in the following tabulation:

	Million board feet
Florida -----	3,178
Louisiana -----	2,410
Georgia -----	1,566
North Carolina -----	1,216
South Carolina -----	1,162
Others -----	3,150
Total -----	12,682



The remaining volume of baldcypress of sawtimber size occupied the coastal and river swamps of Mississippi, Alabama, Arkansas, Texas, Virginia, and other southern States. In Florida, where approximately 25 percent of the total volume was located, about 52 percent of the stand was in the northeastern part of the State, about 36 percent in the central and southern parts, and about 12 percent in the northwestern part. About two-thirds of the baldcypress sawtimber in Florida is less than 12 inches in diameter.

The present stand of baldcypress is considerably smaller than stands of earlier years. In 1909 the total stand of sawtimber size was estimated at 40 billion board feet and in 1920 at about 23 billion board feet.

**Production.**—About 240 million board feet of baldcypress lumber was produced in 1954 (fig. 2). For the 10-year period 1945–54, the average annual production was approximately 247 million board feet.

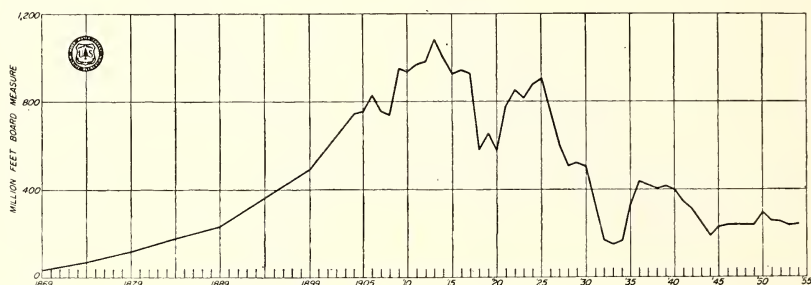


FIGURE 2.—Production of baldcypress (*Taxodium distichum*) lumber, 1869–1954.

Some baldcypress lumber was produced in 21 States in 1954. Six States, including Florida with 23 percent of total cut, North Carolina with 16 percent, South Carolina with 15 percent, Louisiana with 14 percent, Mississippi with 7 percent, and Arkansas with 6 percent, accounted for about four-fifths of total production. Florida has been the leading State in baldcypress lumber production for the last 2 decades.

Historically, production of baldcypress lumber rose from about 29 million board feet in 1869, the earliest year for which statistics on baldcypress are available, to about 1.1 billion board feet in 1913. Since 1913, production has decreased fairly steadily, reflecting the declining volume of baldcypress sawtimber available for use.

In addition to the baldcypress cut for lumber, indeterminate amounts are used for railway ties, poles, fence posts, piling, cooperage, shingles, and similar items. The current total cut may approach 300 million board feet per year.

**Properties.**—Sapwood of baldcypress is about 2 inches thick and nearly white. The heartwood ranges from light yellowish brown to dark brown, reddish brown, or chocolate. However, even though color variations occur in the same locality, the baldcypress lumber produced from tidewater regions, especially within a belt 100 miles from salt water along the Gulf of Mexico and the southeastern Atlantic coast region, runs heavily to the darker colored wood and is re-

ferred to by the trade as tidewater red cypress. Wood from the Florida swamps is sometimes dark in color with lighter streaks that give a rich effect when used for interior paneling, or it may be comparatively light in color with a yellowish or reddish tinge. The inland types of baldcypress, known in the trade as white or yellow cypress, have the same cell structure as the tidewater red cypress; but the heartwood is generally of a lighter color, and the percentage of sapwood is usually greater than that of the red or coastal type.

The reputation for natural decay resistance of baldcypress applies only to the heartwood, which contains toxic substances that afford moderate protection to the wood against insect and fungus attack. Recent tests and surveys show that the baldcypress wood produced commercially today includes only a limited amount of the exceptionally durable heartwood that was characteristic of the old virgin-timber product. Second-growth baldcypress frequently contains a relatively high proportion of sapwood.

The wood of baldcypress is of moderate weight,<sup>3</sup> strength, hardness, and pliability. The lumber contains a considerable amount of moisture when first cut from the log, green sapwood averaging 171 percent and green heartwood 121 percent of the weight of dry wood. It requires more care and time to kiln dry satisfactorily than do many other conifers. It has moderately low shrinkage—somewhat greater than the cedars and redwood but less than southern pine. Slow air drying is successfully practiced. Baldcypress is among the group of woods ranking highest in paint-holding ability. It does not impart taste, odor, or color to food products that come in contact with the wood.

**Principal uses.**—Baldcypress heartwood is used principally for building construction, especially for beams, posts, and other members in docks, warehouses, factories, bridges, and various classes of heavy construction. The heartwood is well suited for siding and for porch construction. Baldcypress lumber, if all heartwood, will give moderate or better decay resistance—especially in above-ground locations. Run-of-the-mill lumber from second-growth timber, which constitutes most of the baldcypress cut today, generally contains a large proportion of sapwood and therefore has no significant advantage in the way of decay resistance.

The amount of baldcypress used in the manufacture of wooden products has declined sharply since 1912 (table 1). Although the wood is used in making a variety of products, over 75 percent of it goes into general millwork, containers (except cooperage), and caskets and burial boxes. An increasing demand for baldcypress in interior trim and paneling has been reported. Boxes and crates consume considerable low-grade wood.

Other uses for baldcypress include tanks, vats, and tubs such as are used in creameries, breweries, bakeries, dyeworks, distilleries, and soap factories, ship and boat building, refrigerators, car construction, and patterns and flasks. In the construction of greenhouses, where a durable wood is necessary, baldcypress heartwood is frequently used. The heartwood is also used for roof planks in dye houses and cotton mills, for cooling-tower construction, and for stadium seats, all where

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<sup>3</sup> The average weight of baldcypress in a thoroughly air-dry condition (12 percent moisture) is 32 pounds per cubic foot.

TABLE 1.—*Baldcypress used in the manufacture of wooden products, by specified years, 1912-48*

Product	1912	1928	1933	1940	1948
Agricultural implements-----	<i>M bd. ft.</i> 2, 682	<i>M bd. ft.</i> 370	<i>M bd. ft.</i> 139	<i>M bd. ft.</i> 113	<i>M bd. ft.</i> 71
Boot and shoe findings-----					24
Boxes, cigar and tobacco-----	1, 559				
Car construction and repair-----	1, 676	2, 659	1, 874	1, 466	709
Caskets and burial boxes-----	19, 158	36, 961	29, 983	36, 100	12, 658
Conduits, pumps, and wood pipe-----	2, 055	305	15	136	1
Containers (except cooperage)-----	<sup>1</sup> 38, 963	<sup>1</sup> 25, 848	19, 101	40, 245	14, 798
Dairy, poultry, other supplies-----	( <sup>2</sup> )	1, 961	112	116	92
Electrical equipment-----	201	964	470	18	579
Fixtures-----	3, 365	1, 223	494	511	2, 094
Flasks-----	<sup>3</sup> 74	( <sup>3</sup> )	<sup>3</sup> 604	<sup>3</sup> 1, 036	1, 060
Flooring-----	( <sup>4</sup> )	( <sup>4</sup> )		218	31
Furniture-----	3, 478	1, 500	336	100	698
Handles-----	152	84			
Instruments, musical-----	70	28		4	
Instruments, professional and scientific-----	23	12	5	3	
Ladders-----	( <sup>2</sup> )	( <sup>2</sup> )			21
Laundry appliances-----	15, 321	3, 432	68	5	
Machinery-----	15, 881	113	1	2	60
Millwork-----	<sup>5</sup> 509, 861	<sup>5</sup> 187, 923	9, 515	28, 079	18, 334
Pallets-----	( <sup>6</sup> )	( <sup>6</sup> )	( <sup>6</sup> )	( <sup>6</sup> )	15
Patterns-----	( <sup>7</sup> )	( <sup>7</sup> )	( <sup>7</sup> )	( <sup>7</sup> )	29
Plumbers' woodwork-----	25				
Prefabricated houses and house panels-----	( <sup>4</sup> )	( <sup>4</sup> )	( <sup>4</sup> )	( <sup>4</sup> )	1, 827
Prefabricated structures except houses-----	( <sup>4</sup> )	( <sup>4</sup> )	( <sup>4</sup> )	( <sup>4</sup> )	14
Printing material-----	30				
Refrigerators-----	<sup>8</sup> 1, 700	<sup>8</sup> 2, 178	278	1, 544	2, 550
Rollers, shade and map-----	20				
Ship and boat building-----	5, 015	1, 486	1, 496	3, 362	1, 318
Shuttles, spools, bobbins-----				253	
Signs, scenery, displays-----	30	943	236	34	614
Sporting equipment, athletic and playground-----	166		8	17	45
Tanks-----	35, 409	8, 321	4, 150	7, 662	4, 081
Toys-----	150		2		
Trunks and valises-----	1, 275	228	249	8	74
Vehicles, motor-----	( <sup>9</sup> )	2, 128	12	415	146
Vehicles, nonmotor-----	1, 321	81	10		
Venetian blinds-----	( <sup>4</sup> )	( <sup>4</sup> )	( <sup>4</sup> )	56	
Woodenware, novelties, and miscellaneous-----	8, 693	528	135	96	60
Total-----	668, 353	279, 276	69, 293	121, 511	62, 003

<sup>1</sup> Does not include baldcypress used for containers by plants not classified as manufacturers of wooden products and which were included in later surveys.

<sup>2</sup> Included in "Woodenware and novelties."

<sup>3</sup> Includes patterns.

<sup>4</sup> Included in "Millwork."

<sup>5</sup> Includes planing mill products such as flooring, siding, ceiling.

<sup>6</sup> Included in "Containers" in earlier reports.

<sup>7</sup> Included in "Flasks."

<sup>8</sup> Includes kitchen cabinets.

<sup>9</sup> Included in "Vehicles, nonmotor."



a high degree of resistance to decay is needed. "Pecky" cypress, which is relatively cheap, is used where durability rather than good appearance or water tightness is required. It is also used for wall paneling because of its interesting architectural effect. In forms other than lumber, baldcypress is used in considerable quantities for railway ties and in limited quantities for poles, piling, shingles, coo-  
erage, and fence posts.

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